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Docket 3815.01

Express Mail Label Number: EL357446283US

**TRANSMITTAL LETTER TO THE UNITED STATES
ELECTED OFFICE**

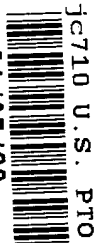
<u>International</u> <u>Application No.</u>	<u>Filing Date</u>	<u>Priority</u> <u>Claimed</u>
PCT/BR98/00053	July 28, 1998	July 29, 1997

Title of Invention: A ROOF WATERPROOFING SYSTEM CONSISTING OF AN ORGANIC RESIN PROTECTED BY AN ALUMINUM-COPOLYMER COMPOSITE FOIL

Applicant: Celso MARTINEZ, Jr.

Applicant herewith submits the following items under 35 U.S.C. §371:

1. This express request to immediately begin national examination procedures (35 U.S.C. §371(f)).
2. Basic National Fee (37 CFR 1.492(a)(1)-(4)): Neither international preliminary examination fee nor international search paid to USPTO but application filed with EPO or JPO search report (37 CFR 1.492(a)(5)) (\$420.00--small entity).
3. Application in conjunction with concurrently filed preliminary amendment presents 1 independent claim and 4 total claims and no multiply dependent claim. No additional claim fee is required. **Total fees: \$420**
4. Payment of Fees: A check in the amount of **\$420** is enclosed to cover the above fees. The Commissioner is hereby authorized to charged underpayment of required fees under 37 CFR 1.16 or 37 CFR 1.17 associated with this communication or to credit any overpayment to Deposit Account No. 50-0636.
5. A copy of the International application (35 U.S.C. §371(c)(2)) including Request is transmitted herewith.
6. A copy of International Publication Number **WO9906646** including Search Report.
7. Article 19 amendments are **NOT** transmitted because none was made.
8. An executed oath or declaration and power of attorney of the inventor (35 U.S.C. §371(c)(4) complying with 35 U.S.C. §115 is submitted herewith and such oath or declaration identifies the application and any amendment under PCT Article 19 which



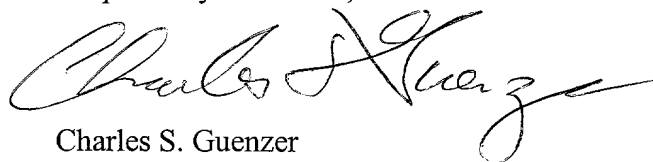
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Docket 3815.01

were transmitted as stated above; and states that they were review by the inventor as required by 37 CFR 1.70.

9. A Verified Statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27 is transmitted herewith.
10. The above items are being transmitted by 30 months a a proper Demand for International Preliminary Examination was by the 19th month from the earliest claimed priority date.
11. A Preliminary Amendment is transmitted herewith.

Respectfully submitted,



Charles S. Guenzer
Reg. No. 30,640

Date:

January 25, 2000

Mailing Address:

Customer Service No. 22,337
Law Offices of Charles Guenzer
P.O. Box 60729
2211 Park Boulevard
Palo Alto, CA 94306



22337

PATENT TRADEMARK OFFICE

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FROM :

PHONE NO. :
GUENZER, IALORDIO

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Page 1 of 2

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(d) AND 1.27 (b)) - INDEPENDENT INVENTOR**Docket No.
3815.01

Serial No.

Filing Date

Patent No.

Issue Date

Applicant/
Patentee:

Celso MARTINEZ, Jr.

Invention: A Roof Waterproofing System Consisting of an Organic Resin
Protected by an Aluminum-Copolymer Composite Foil

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled above and described in:

- ☒ the specification to be filed herewith.
☐ the application identified above.
☐ the patent identified above.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ No such person, concern or organization exists.
☐ Each such person, concern or organization is listed below.

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27)

FULL NAME

ADDRESS

☐ Individual☐ Small Business Concern☐ Nonprofit Organization

FULL NAME

ADDRESS

☐ Individual☐ Small Business Concern☐ Nonprofit Organization

FULL NAME

ADDRESS

☐ Individual☐ Small Business Concern☐ Nonprofit Organization

FULL NAME

ADDRESS

☐ Individual☐ Small Business Concern☐ Nonprofit Organization

FROM :

PHONE NO. :
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Page 2 of 2

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF INVENTOR Celso MARTINEZ, Jr.SIGNATURE OF INVENTOR DATE: 21 JAN 2000

NAME OF INVENTOR _____

SIGNATURE OF INVENTOR _____

DATE: _____

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DATE: _____

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Celso MARTINEZ, Jr. **Attorneys Docket:** 3815.01

Serial No.: unknown **Art Unit No.:** unknown

Filed: herewith **Examiner:** unknown

For: "A ROOF WATERPROOFING SYSTEM CONSISTING OF AN ORGANIC RESIN
PROTECTED BY AN ALUMINUM-COPOLYMER COMPOSITE FOIL"

Commissioner of Patents and Trademarks
Washington, DC 20231

PRELIMINARY AMENDMENT

Sir:

In a Preliminary Amendment for entry before calculation of filing fee and before initial examination, please amend the above application as follows:

In the claims:

1. (Amended) Protection for exposed building roofs against the percolation of water, by application of an aluminum [aluminium] alloy lined with thermoplastic copolymers, for application over porous or non-porous exposed surface (1), smoothed or not, including baseboards or parapets (2) attached to the vertical surfaces of the structures by sets of

bolts/bushing/washers (6), allowing the rainwater flow by means of a piping (3), characterized in that it comprises [is comprised of] a highly adhesive, viscous-plastic, thermoplastic and hydrophobic organic resin (4) covered by strips of composite (5) made of aluminum [aluminium] alloy lined by thermoplastic copolymers, welded at the overlapping thereof (7) by means of a thermal process.

2. (Amended) Protection for exposed building roofs against the percolation of water, by application of an organic resin protected by a composite of an aluminum [aluminium] alloy lined with thermoplastic copolymers, as claimed [on] in Claim 1, characterized in that the resin (4), by being viscous-plastic, allows relative displacements [displacements] between the composite and the substrate, so that eventual cracks or fissures occurring in that substrate, caused by deformation of thermal or mechanical nature, do not propagate to the lining in question with the same intensity, thereby ensuring a permanent watertightness.

3. (Amended) Protection for exposed building roofs against the percolation of water, by application of an organic resin protected by a composite of an aluminum [aluminium] alloy lined with thermoplastic copolymers, as claimed in Claim 1 [and 2], characterized in that the watertightness is generated by two distinct processes that, in the event of a severe mechanical action causing [causes] a perforation of the composite lining, provide a permanent watertightness, due to the action of the resin, that seals the structure surface pores.

Please add the following new claim:

4. Protection for exposed building roofs against the percolation of water, by application of an organic resin protect by a composite of an aluminum alloy lined with thermoplastic copolymers, as claimed in Claim 2, characterized in that the watertightness is generated by two distinct processes that, in the event of a severe mechanical action causing [causes] a perforation of the composite lining, provide a permanent watertightness, due to the action of the resin, that

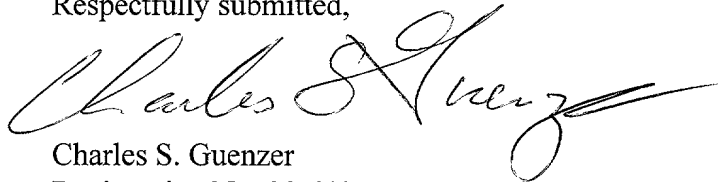
seals the structure surface pores.

REMARKS

Claims 1-4 remain in the application. These claims are based on the Annex to the English-language International Preliminary Examination Report. The amendments remove a multiple dependency and correct some non-standard English usage.

In view of the above amendments and remarks, reconsideration and allowance of all claims are respectfully requested. If the Examiner believes that a telephone interview would be helpful, he is invited to contact the undersigned attorney at the listed telephone number, which is on California time.

Respectfully submitted,



Charles S. Guenzer
Registration No. 30,640
(650) 566-8040

Date: January 25, 2000

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"A ROOF WATERPROOFING SYSTEM CONSISTING OF AN ORGANIC RESIN PROTECTED BY AN ALUMINUM-COPOLYMER COMPOSITE FOIL".

The present Utility Model is related to a technique for protection of exposed building roofs, consisted of cementitious (or not) substrate, against percolation of water, that conjugates, in one system, two processes that confer watertightness to the roof, providing larger reliability to the surfaces against the percolation of water.

At present, the factory-prepared systems which are destined to obtain roof watertightness (except the conventional roofs in clay tile, fiber-cement or metallic elements) are mainly constituted of prefabricated asphalt-based, asphalt-elastomeric or pure elastomeric impermeable films.

The factory-prepared asphalt-based and asphalt-elastomeric sheets have usually an internal reinforcement provided by polyethylene films, non-woven polyester or non-woven fiberglass. Elastomeric films, particularly the fluid-applied elastomers, do not usually contain reinforcement in its interior, although some polymeric manufactured sheets do it to provide added strength and puncture resistance. These films are applied on a structural substrate (e.g. concrete slabs), sometimes regularized by cementitious mortar. The mortar is used to create a surface free from angular points and depressions besides granting suitable slope for water flow.

Some of these materials are applied to the mud slab through previous application of an appropriate asphalt-based primer, used to fix the films strongly to the substrate. Primer is cold-applied, but film attachment to the primer is executed, often times, through hot-process, by means of a torch.

In order to protect the film against the deleterious effect of ultraviolet rays, some roofing materials show, in one of their faces, an element in order to impede such effect

on the asphalt-based material. Usually, this element comprises an appropriate elastomer (Patent at USPTO under number 4,775,567: "A waterproofing laminate suitable for use in roofs, floors, or other surfaces where waterproofing is desired, comprises an elastomeric sheet secured to a modified bitumen layer and a release sheet secured to the modified
5 bitumen layer. Certain preferred materials for use in the laminate are recited."), crushed slate powder, or thin aluminum film facing, surfacing one side of the asphalt-based sheet.

These prefabricated sheets are meant for roofs with eventual or sporadic traffic, usually necessary for maintenance or cleaning operations. Such facing materials do not give mechanical protection to the sheets, but they do protect them against the
10 incidence of ultraviolet solar rays. On the other hand, infrared rays are also reflected by the aluminum facing, improving thermal comfort conditions on the environment protected by the referred sheets.

There are, still, factory-prepared asphalt-elastomeric membranes, in which one face presents self-adhesive finish and the other face receives, as in the previous case,
15 a thin film facing of aluminum. (Patent at USPTO under numbers 4,936,938; 5,096,759 and 5,142,837 – "A laminated roofing material includes an aluminum foil top sheet laminated to a polyethylene film by an ionomer resin. After the sheets are bonded together they are cooled to set the resin and an asphalt (bitumen) coating is applied to the exposed polyethylene sheet and covered with a release paper. The roofing material
20 is applied over an underlayment to form a roof supported by conventional sheeting material.")

Such a material has several applications in the building construction sector, as for example, the recovery of metallic roofs which present leakage caused by oxidation and consequent perforation of the roof metallic cover. In this case, primers are not

used, as one of the material faces already has an adhesive element, provided that the substrate is absolutely clean and dry to promote attachment.

The main disadvantage in the case of the aluminum-faced membranes resides in the low mechanical resistance of the coating on the exposed face. As the aluminum film is
5 extremely thin (about 35 to 50 micrometers), it is subject to the damaging mechanical actions which may expose the asphalt-based portion of the membrane to the ultraviolet solar rays.

Another quite common occurrence in the usage of asphalt-based or elastomeric sheets to building construction roofs is the difficulty to locate eventual defects that could lead to watertightness failure. The infiltration can be caused by a flaw in lateral or
10 longitudinal welding of the membrane strip overlaps or even by involuntary perforation in the sheet. Water penetrates through the flaw, reaches the mud slab and percolates the interior of its porous matrix under the roofing membrane, till it finds a defect in the cimentitious substrate (e.g. a joint, a "bug hole"), making the leakage visible on the inside of the building. Most of the time, the point at which the leakage becomes visible
15 does not coincide with the position of the failure which caused the leak. Moreover, as primer attaches the sheet firmly to the deck, in case a dynamic crack appears in the substrate due to structural movements (e.g. severe climatic thermal gradients), the new joint will probably propagate to the roofing material, splitting it at this position and allowing water to enter the split.

20 With the objective of solving such inconveniences, the present system was developed, through which substrate watertightness is assured by two processes: first, an organic, flexible, hydrophobic, self-leveling and viscoelastic composition resin is applied directly on the structural substrate to be treated, sealing the pores in its surface; second, an impermeable aluminum foil laminated with thermoplastic
25 copolymers is adhered to the surface by the organic resin.

The advantages of this system when compared to the existing ones are as follows: a) it offers relatively large resistance to involuntary mechanical injuries on the foil, due to the presence of larger film thickness (about 300 micrometers); b) its watertightness results from two different processes: in the hypothesis that a severe mechanical injury causes foil perforation, the structure will stay tight as its pores remain sealed by the organic resin action; c) the fact that the system permits being applied directly over the concrete deck structure, eliminating the need of previous execution of mud slab, which is indispensable in the prevalent waterproofing systems, and leading to greater economic feasibility; d) the system can also be applied over mud slab substrates, although direct application on concrete deck structure is preferable; e) the ease and economy in the location of the leak-causing flaw, when flood test is in progress, if the proposed system is applied directly on the concrete deck structure; and, f) the resin, being viscoelastic, allows reasonable adherence of the film composite to the substrate, admitting the possibility of small sliding between them; this characteristic is the one responsible for the integrity of the film in the circumstance of a dynamic crack arise on the deck, as such crack is not transmitted to the film, since it slides on the resin layer without breaking, differently from asphaltic or asphalt-elastomeric sheets which are intimately stuck to the substrate by means of primers.

The invention can be better understood through the following detailed description, in consonance with the drawing enclosed, where:

ILLUSTRATION 1 shows the plan of a surface on which the proposed system was applied.

ILLUSTRATION 2 shows the longitudinal section of a surface on which the proposed system was applied.

ILLUSTRATION 3 shows the traverse section of a surface on which the proposed system was applied.

With regard to these illustrations, it can be observed that the organic resin (4) is applied over the deck structure (1) and its baseboards or parapets (2). This resin (4) has high attachment power to porous and non-porous substrates, besides having self-leveling, hydrophobic and viscoelastic characteristics; in the specific case of the porous substrates, the material sticks to the surface, penetrating the external capillaries of the porous matrix and sealing them. Therefore, this material turns the porous surface totally impervious to water and, as the resin is highly flexible, it allows deck's small structural movements without losing watertightness.

Over the substrate, previously treated with the mentioned resin, a composite film (5) of aluminum laminated on both faces with thermoplastic copolymers is applied in a way so as to protect the resin against the harmful action of ultraviolet solar light. The welding (7) of the several strips of the composite, in the longitudinal direction, is done by the application of heated air, through appropriate equipment and temperature, in the overlap interface of two adjacent strips. The copolymer which laminates the aluminum foil is thermoplastic and allows to be melted with heated air, attaching the adjacent sheets on the overlapping strip. No bonding materials are needed for this purpose.

For better fastening of the composite strip edges to the deck, screws are used (6), endowed with plastic washers, attached in common expansion shells that are introduced inside appropriate holes, performed in the structure of the baseboards and parapets (2).

The rain water, collected on the treated surface, flows through a pipeline (3) in PVC or other material destined for that purpose.

CLAIMS

1st) " A ROOF WATERPROOFING SYSTEM CONSISTING OF AN ORGANIC RESIN PROTECTED BY AN ALUMINUM-COPOLYMER COMPOSITE FOIL ", characterized by the application, on exposed porous or non-porous surfaces (1), mud slab regularized or not, of concrete, wood, metals, etc., besides baseboards and parapets (2), of high adherence organic resin (4), with self-leveling, viscoelastic, thermoplastic and hydrophobic properties, covered by film strips (5) of aluminum laminated with thermoplastic copolymers, welded at its overlaps (7) by thermal process, fastened in the vertical surfaces of the structures by screws/plastic washers/expansion shells groups (6), and whose flow of rain water is made by pipeline (3) in PVC or other equivalent material.

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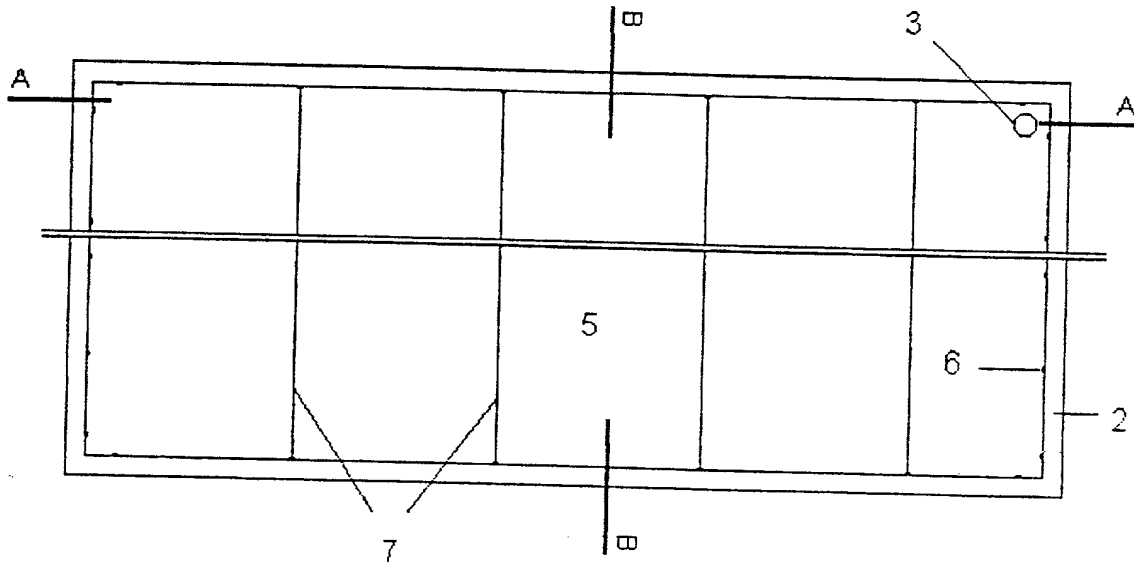


ILLUSTRATION 1

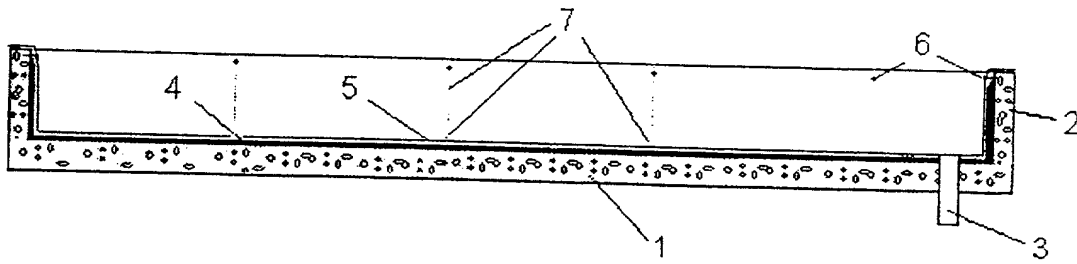


ILLUSTRATION 2

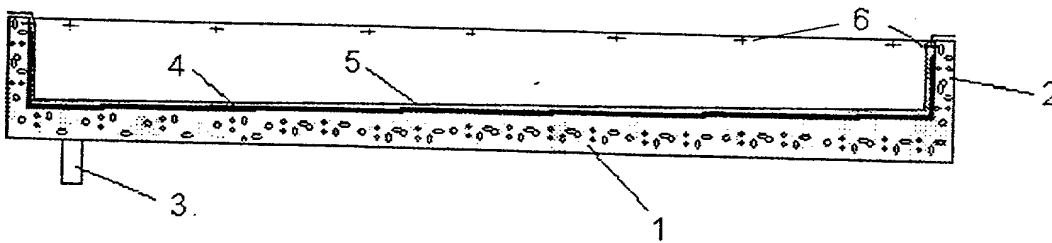


ILLUSTRATION 3

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Docket No.
3815.01

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

A ROOF WATERPROOFING SYSTEM CONSISTING OF AN ORGANIC RESIN PROTECTED BY AN ALUMINUM-COPOLYMER COMPOSITE FOIL

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on 28 July 1998 as United States Application No. or PCT International Application Number PCT/BR98/00053

and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

☐ I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

<u>MU 7701574-6</u>	<u>Brazil</u>	<u>29/07/1997</u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	
<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	
<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

PCT/BR98/00053

28 July 1998

pending

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

Charles S. Guenzler, Reg. No. 30,640

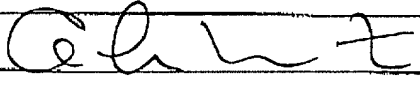


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Charles S. Guenzler (650)-566-8040

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Sole or first inventor's signature 	Date 21 JAN 2000
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Citizenship Brazil	
Post Office Address Avenida Dr. Carlos Botelho, 3020 - Centro; 13560-251 Sao Carlos - SP; Brazil	

Full name of second inventor, if any	
Second inventor's signature	Date
Residence	
Citizenship	
Post Office Address	